Algebra 1 Unit 6: Introduction to Quadratic Functions
Lessons 1–4: Introducing Quadratic Functions

Explore, Play, and Discuss

- I can create drawings, tables, and graphs that represent the area of a garden.
- I can recognize a situation represented by a graph that increases then decreases.
- I can describe how a pattern is growing.

Activity Suggestions:

- ➢ Lesson 1: Can be completed in an online or paper journal.
- ➢ Lesson 2, Activities 1 and 2: Can be completed in an online or paper journal.

Assessment Suggestions:

- ➢ Check Your Readiness assessment: Administer items 1, 5, 6, 8 in the first few days of this section.
- ➢ Lesson 1 cool-down

Deep Dive

- I can tell whether a pattern is growing linearly, exponentially, or quadratically.
- I know an expression with a squared term is called quadratic.
- I can recognize quadratic functions written in different ways.
- I can use information from a pattern of shapes to write a quadratic function.

Activity Suggestions:

- ➢ Lesson 2, Synthesize Activity 2, then do Activity 3: sync discussion
- ➢ Lesson 3, Activities 1 and 2: sync discussion

Assessment Suggestions:

- ➢ Lesson 2 cool-down
- ➢ Lesson 3 cool-down

Synthesize and Apply

- I can explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions.

Activity Suggestions:

- ➢ Lesson 3, Activity 3: Can be completed in an online or paper journal.
- ➢ Lesson 4: Can be completed in an online or paper journal.

Assessment Suggestions:

- ➢ Lesson 4 cool-down
- ➢ Revise work from Lessons 1–3 based on feedback.
- ➢ Mid-Unit Assessment items 1 and 5

Ongoing Practice	
	• Assign one or more of the distributed practice problem sets from Lessons 1–4 to be completed over the time period that the section is being worked on. • These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. • Specify which problems students should submit, or let them choose. • Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	
	• Any of the Are You Ready for More activities from Lessons 1–4. • Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Lessons 5–10: Quadratic Functions and Equivalent Quadratic Expressions

*Note: This section introduces the factored form of quadratic expressions. Unit 7 explores the process of rewriting quadratic expressions in factored form and solving quadratic equations by using factored form. For this reason, if students struggle with the content in Lessons 8 and 9, consider these lessons an introduction to the concept of factored form and resist the temptation to slow down here.

Explore, Play, and Discuss

- I can explain the meaning of the terms in a quadratic expression that represents the height of a falling object.
- I can use tables, graphs, and equations to represent the height of a falling object.
- I can rewrite quadratic expressions in different forms by using an area diagram or the distributive property.

Activity Suggestions:

- ➢ Lesson 5: Can be completed in an online or paper journal.
- ➢ Lesson 6, Activity 1: Can be completed in an online or paper journal.
- ➢ Lesson 8: Can be completed in an online or paper journal. Activities 2 and 3 benefit from a worked example.

Assessment Suggestions:

- ➢ Check Your Readiness assessment: Administer items 2, 3, 4, and 7 in the first few days of this section to inform planning.
- ➢ Journal entry: Select questions from the Lesson 5 lesson synthesis or the Lesson 8 lesson synthesis for students to reflect on in an online journal or discussion board.

Deep Dive

- I can rewrite quadratic expressions given in factored form in standard form using either the distributive property or a diagram.
- I know the difference between “factored form” and “standard form.”

Activity Suggestions:

- ➢ Lesson 6, Activities 2 and 3: sync discussion
- ➢ Lesson 9: sync discussion.

Assessment Suggestions:

- ➢ Lesson 6 cool-down
- ➢ Lesson 9 cool-down

Synthesize and Apply

- I can explain the meaning of the intercepts on a graph of a quadratic function in terms of the situation it represents.
- I know how the numbers in the factored form of a quadratic expression relate to the intercepts of its graph.

Activity Suggestions:

- ➢ Lesson 10: Can be completed in an online or paper journal. Activity 3 would benefit from a worked example.

Assessment Suggestions:

- ➢ Lesson 10 cool-down
- ➢ Have students revise problems from previous lessons based on feedback.
- ➢ Journal entry: Select questions from the Lesson 10 lesson synthesis for students to reflect on in an online or paper journal.
- ➢ Mid-Unit Assessment Items 2, 3, and 6

Ongoing Practice

- Assign one or more of the distributed practice problem sets from Lessons 1–4 to be completed over the time period that the section is being worked on.
- These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit.
- Specify which problems students should submit, or let them choose.
- Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources

- Lesson 7
- Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Lessons 11–17: Features of Graphs of Quadratic Functions

Explore, Play, and Discuss

- I can graph a quadratic function given in factored form.
- I know how to find the vertex and -intercept of the graph of a quadratic function in factored form without graphing it first.

Activity Suggestions:	**Assessment Suggestions:**
➢ Lesson 11: Can be completed in an online or paper journal.	➢ Lesson 11 cool-down. ➢ Journal Entry: Have students write about the accuracy of their predictions in 11.3.

Deep Dive

- I can explain how the a and c in $y = ax^2 + bx + c$ affect the graph of the equation.

Activity Suggestions:	**Assessment Suggestions:**
➢ Lesson 11 synthesis: sync discussion ➢ Lesson 12 Activities 1, 2, and 4: sync discussion	➢ Lesson 12 cool-down

Synthesize and Apply

- I can explain how a quadratic equation and its graph relate to a situation.

Activity Suggestions:	**Assessment Suggestions:**
➢ Lesson 14 Activities 1, 2, and 3	➢ End-of-Unit Assessment Items 1, 4, 5 and 7

Ongoing Practice	
	• Assign one or more of the distributed practice problem sets from Lessons 1–4 to be completed over the time period that the section is being worked on. • These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. • Specify which problems students should submit, or let them choose. • Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	
	• Lesson 12, Activity 3 • Lesson 13 • Lesson 14, Activity 4 • Lessons 15–17 • Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.